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Treatment and control of narcotic addiction

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Introduction

The problem of narcotic addiction is one which the importance has come to be realized by the medical profession in general only in recent years. Its presence has long been recognized by the laity and for this reason has been a constant subject for exploitation of "cures" by quacks, charlatans, and vendors of patent medicines, a source of discussion and condemnation by large numbers of would-be reform groups, and a dilemma which has taxed the ingenuity of lawmakers and the medical profession in attempting to solve the problem of adequate control and treatment. Although many substantial advances have been made in the past two decades, there is still much to be done to help solve the problem.

The question is often asked, "Just what constitutes or what is addiction?" and it, therefore, becomes necessary to propose a definition of addiction and to distinguish it from habituation. The definitions used are those set forth by Detrick and Thienes (10). By the term addiction is meant that condition of mind or body induced by drugging which requires a continuation of that drug, and without which a serious mental or physical derangement results. Habituation is interpreted to mean a

condition wherein one becomes accustomed to, but not seriously dependent upon, a drug. Since the term "tolerance" will be used many times, it is also defined, as being a phenomenon characterized by the fact that more and more of the drug must be used to produce equivalent effects.

From the above definitions, it can be seen that there is a definite distinction between addiction and habituation, and it is upon these definitions that the general selection of the drugs considered is based. Those drugs to be considered are: opium and its derivatives causing addiction, the products obtained from coca leaves; namely, cocaine, cannabis indica and derivatives; and peyote and its derivatives. It will be understood that these drugs do not include the entire list of drugs producing addiction, but on the other hand, relatively few are omitted since these drugs and derivatives and preparations constitute almost all of the addiction drugs according to the definition of addiction. There has been much controversy concerning the status of certain drugs as to their ability to cause addiction, but after a review of the literature discussing the physiological and pharmacological actions of the various drugs, one comes to the conclusion that those mentioned above are at the present time the ones recognized as causing

addiction, whereas the others cause only habituation.

In discussing the treatment and control of addiction, the term narcotic addiction will usually be used rather than that of any one specific type since, as will be shown later, the symptoms of withdrawal are the same, the underlying etiology similar, and the treatment and control are closely related in the various types.

Etiology

The question of the cause of narcotic addiction has been a constant source of argument and debate between reform groups and the medical profession, the legislative bodies and the medical profession, the reform groups and legislative bodies, and among the various investigators within the medical profession itself. Due to this controversy, many investigators sent out questionnaires to physicians over different sections of the country trying to ascertain in some degree the most probable cause of addiction. Until about 1900 almost all of the answers to the questionnaires and the literature published independently seemed to place the burden of responsibility upon the physician. In other words, addiction was blamed mostly upon the indiscriminate administration of narcotics by the practitioner, and the remainder was thought to be due to association with other addicts and the uncontrolled dispensing of addiction producing drugs by the druggists. As the study of the addiction problem continued, however, the ideas concerning the etiology gradually changed, which accounts, in part, for the measures instituted for control.

The present day narcotic addicts in the United States are recruited almost exclusively from among persons who are neurotic or who have some form of a twisted person-

ality. This is undoubtedly true of the addicts down through the ages, but such a background of personality and mental maladjustment was not generally recognized or brought into prominence until the early part of the present century. Rubin (38), after a close observation of cases before and after treatment, suggests that narcotic addicts became so because of an inherent or acquired mental weakness, and that in most cases the weakness antedated their habitual indulgence in habit forming drugs.

Though the condition of addiction has as its background an abnormal psychopathic state, these states can be further classified as to their relation to the cause of the addiction. Kolb (18) in a study of two hundred thirty cases of narcotic addiction, places them in the following categories:

1. People of normal nervous constitution accidently or necessarily addicted through medication in the course of an illness.
2. Care-free individuals, devoted to pleasure, seeking new excitements and sensations, and usually having some ill-defined instability of personality that often expresses itself in mild infractions of social customs.
3. Cases with definite neurosis not falling into

classes 2, 4, or 5.

4. Habitual criminals, always psychopathic.

5. Inebriates.

Keschner (16) states that for clinical purposes addicts may be divided into two groups:

1. Those who become victims to a physician's prescription in the course of a painful somatic or mental illness, or for insomnia.

2. Individuals who drift into narcotism because of bad company, pleasure, curiosity, desire for a thrill, or because they are unable or unwilling to face the individual problems, difficulties, disappointments and defeats of everyday life which they encounter. The individuals in this group are inherently mentally unstable, especially in the emotional sphere, and they represent the various types of constitutional psychopathic inferiority. They are, figuratively speaking, in the twilight zone of mental ill health.

According to Wilson and Bartle (49), the commonest single cause of addiction is a psychopathic personality. Insomnia is frequently ascribed as a cause, but in all probability the underlying cause is the condition causing the insomnia. These men also state that the use of

drugs is more common in urban areas and among those who handle drugs as doctors, nurses, pharmacists, and also among criminal groups.

The inebriate impulse is also considered as an important cause since a large proportion of addicts are fundamentally inebriates. Kolb (18) contends that the inebriate addict is impelled to take narcotics by a motive similar to that which prompts the periodic drinker to take alcohol, and that the so-called narcotic and intoxication impulses are the same. By observation of a large number of cases, he found that some drunkards are improved socially by abandoning alcohol for an opiate, but the change is a mere substitution of a greater for a lesser evil.

The individuals constituting the group which become drug addicts are motivated almost entirely by the desire of the moment and are unable to follow any sustained plan of thought or action. They constitute the so-called misfits of society. Such persons are highly susceptible to addiction because narcotics supply them with a form of adjustment of their difficulties. As brought out by Kolb (18), the inflation of personality produced by large doses of morphine or heroin is a state of ease, comfort, and freedom from pathological tensions and strivings

brought about by the soothing narcotic properties of opiates on abnormal individuals. It can thus be seen that it is the neuropath and psychopath who seeks in narcotic drugs the missing link in his chain of normal functions.

In most cases the drug addicts, especially the criminal type, are inveterate liars. They have no regard for the truth and resort to all kinds of deceit and trickery, especially in their necessary efforts to obtain their necessary habit forming drug. Since the addict is in the beginning endowed with a poor mentality and personality and are unable to meet life's problems and complications, it follows that as a rule the most of them never rise to very great heights either socially or economically. As a result of the expense entailed in keeping up their supply of the drug combined with their low economic status, they are eventually driven to crime as a means of providing themselves with the drug. Once having begun the use of a drug and having become addicted, there is a continued gratification of a craving for an artificial stimulation which establishes a vicious circle of disease, poverty, crime, and punishment, each following the other in sequential order, and reacting upon each other until a break in continuity of the circle is

brought about through abstinence. Abstinence, in turn, brings on a series of mental and physical disorders which require the restraining influence of a normal will power, the lack of which compels the user to resort to drugs in order to obtain relief. Thus the addiction becomes deep rooted, the vicious circle continues to operate, the addict develops into a pathetic figure, and is finally reduced to a state of mental and physical deterioration.

Some cases of addiction may be attributed to the administration of the drug by a physician for patients ill with painful malady, but not as many are due to this cause as would be supposed from the statements of the addicts themselves since addicts are prone to be liars. As a general rule the addict's confession or admission should be guarded with suspicion, but when he places the blame on himself and accepts whatever disposition the examiner makes of him, his statement may be regarded as true. Rubin (38) found on close questioning, by the addict's own admission about seventy per cent stated that their addiction to the various drugs was due to their own manner of loose living and indiscriminate social relations with other addicts and users.

Sceleth and Kuh (41) after twenty years of experience and treatment of five thousand addicts state that

fifteen to twenty years prior to 1924 most addicts got their habit through physical disease or discomfort but that the majority of cases now come from association, especially in the cities. In their experiences, seventy-five per cent of the private patients were physicians who thought they could use a narcotic drug safely on themselves. As to the personality of the addict their findings were that the drug was taken in youth to give added self confidence and to feel and enjoy life more abundantly; in middle age, to avoid life's conflicts by shutting oneself behind a wall of narcotism, and to overcome fatigue incident to excess of other kinds; and in old age, to forget. The underlying causes lie, therefore, in the personalities of the individual and the nature of the disorder causing the use of the drug is mostly psychological and not physiological or pathological. The addict's ideas of normal are normal plus.

One of the very interesting aspects of narcotic addiction is the relation of, the intelligence of addicts, the general and racial classes, the age groups of the addicts, the duration of the addiction, and the occupation of the addict, to the etiology of addiction. Copeland (8), in a survey of about the first 3000 admissions to the narcotic clinic of the New York City Health Depart-

ment, states that there were 2,647 males and 615 females. As to racial groups, 2,802 were white and 460 colored. Concerning the stated causes of addiction, 429 blamed it on illness, 2,842 on association, and 351 on other causes (curiosity, pleasure, trouble, etc.). The age groups were as follows:

15 -- 19 -------- 908
20 -- 25 -------- 927
26 -- 30 -------- 711
31 -- 40 -------- 583
41 or over ------ 133

It is interesting as well as somewhat appalling to note that over one-half of the total number of patients fall into the first two age groups which cover the earliest years of adult life and the teen ages. The duration of the addiction in this series of cases was:

less than 1 year 211
2 -- 5 years --- 1,166
5 -- 10 years --- 1,496
10 -- 15 years --- 90
over 15 years --- 299

In relation to occupation, 1,982 were skilled (trade or profession, and 1,280 were unskilled.

In most cases the type and personality of the addict

can be correlated with the mentality of the individual. Anderson (3) in 1917 reported that of 70 cases studied at the Boston Municipal Court, 54.3% had a mental level below 12 years, 28.5% were feeble-minded, and all had some form of mental or nervous abnormality. Jewett (14) in an examination of 200 cases at Bellevue Hospital found that 25% had an I. Q. below 70, 40% had an I. Q. of 70-80, 30% had an I. Q. of 80-90, and 5% were considered normal. Kolb (19) tested the mental levels of 100 cases with the following results.

I. Q. below 70------10
70-75------10
76-85------14
86-95------38
96-105-----20
106-110----- 7
above 110-- 1

He further states that the diagnosis of feeble-mindedness depends upon the criteria used and on the individual judgment in applying the criteria. Using the social criteria along with the results of the mental tests, he concluded that 5 of the 100 cases were feebleminded and three were borderline. Ninety per cent of the 100 cases were either psychopathic or were suffering from some form

of neurosis before they became addicted.

A commonly shared opinion among many is that addiction gives rise to criminals and criminal acts, but by the extensive investigation done on criminals shows that it is the condition underlying the addiction that is responsible for criminal tendencies. Habitual criminals are psychopaths, and psychopaths are abnormal individuals who, because of their abnormality, are especially liable to become addicts. Addiction is only an incident in their delinquent careers, and the crimes they commit are not precipitated by the drugs they take. Often the drug user, after becoming addicted, may turn to crime in its minor forms in order to keep up his supply of the drug, but if the person were not endowed with a psychopathic personality he would probably not have become addicted in the first place. Thus it is the make-up of the individual and not the drug that drives him to crime. It is rare to find a normal person that has become addicted by administration of a drug over a long illness, who has turned to crime to continue the supply no longer available from the physician. These are the people who at once and sincerely so, wish to be treated and cured of the affliction.

Kolb (18) states that nervously normal addicts are

not inflated by narcotic drugs and psychopathic criminals are less dangerous when inflated than when in their normal condition. All preparations of opium capable of producing addiction inhibit the aggressive impulses and make psychopaths less likely to commit crimes of violence. He also states that the inflating properties of heroin are similar to those of morphine and that both heroin and morphine in large doses change the drunken, fighting psychopaths into sober, cowardly, nonaggressive idlers.

In the opinion of Keschner (17), cocaine up to a certain point makes criminals more efficient as criminals but beyond this point it brings on fear and delusions or a state of paranoia, during which the addict might murder a supposed pursuer or commit other similar crimes of violence. In accordance with these views it might also be brought out that the most available drug in a locality determines the nature of the majority of the drug addicts. In the South, the negroes are cocaine addicts, morphine addicts are most common in Chicago, and in New York 95% of the addicts are heroin users. Furthermore, heroin is the drug of addiction in only one section of the country along the eastern seaboard. It can thus be understood why the addicts may differ in the various sections of the country.

The question may be asked, "Why is the etiology of narcotic addiction important in the treatment and control?" It can be answered by the fact that upon the recognition and determination of the cause depends the course of the treatment, the proper methods of control, and the process of the rehabilitation of the addict so as to make him a useful citizen to the community and to society in general.

Treatment

Before entering into a discussion of the various methods of treatment it might be well to state that the treatment of narcotic consists of the treatment of the withdrawal symptoms and not the treatment of the addict as he is under the influence of his particular drug. These withdrawal symptoms, though doubted to exist by some workers, are a definite entity and will be enumerated very briefly so that the treatment might in some way be justified.

According to the Mayor's Committee on Drug addiction of New York City (38), the symptoms giving the best index of the actual condition are: (1) Gastro-intestinal symptoms, consisting of nausea, vomiting, abdominal cramps and diarrhoea; (2) muscular symptoms consisting of aches and twitchings; (3) restlessness, both physical and mental; (4) prostration, subjective and objective. The course of the symptoms on withdrawal is as follows: in a few hours psychic symptoms appear, restlessness, uneasiness, anxiety, irritability, within 12 to 18 hours the physical symptoms begin: gastro-intestinal, muscular, and a legion of others, reaching a maximal intensity at the end of 24 hours. This peak is maintained for 24 hours after which the symptoms subside, so that at the

end of 72 hours, or at the most 96 hours, they have practically disappeared. The reasons for the psychic withdrawal symptoms are difficult to determine. For the cause of the physical symptoms and for the action of the various narcotic drugs on the body, one may refer to standard textbooks of Pharmacology and Physiology.

In discussing the treatment, the various methods will be grouped together according to the classification used by Adams (1) and (2). In using this classification, the various treatments employed are grouped together according to the medicinal methods aiding in controlling the withdrawal symptoms.

The Ambulatory Method

This method of treatment of addiction is the one most frequently employed by the now specialist practitioner who attempts to cure a mildly addicted patient. In this treatment the patient is free to go about his duties and to receive from the physician, and under his instructions, enough of the narcotic drug as is deemed necessary. The object aimed at in this treatment is to gradually reduce the amount of the narcotic so that is can ultimately be withdrawn with the least amount of discomfort, or reduced to a minimum. It is often possible to reduce the amount of the drug, especially in persons with a

weak addiction or in a normal person who has become accidentally addicted. However, it is not a disintoxication treatment since it is rarely possible to entirely withdraw the drug. It may be added that when none other is available, this treatment is better than nothing at all.

Abrupt Withdrawal Without Special Measures

In these methods the drug is abruptly and completely withdrawn from the patient. No special drugs are used but the patient is put to bed for the first few days and helped along by skilled nursing and general remedial measures. Usually, free but not excessive purgation is used. The insomnia is treated by simple hypnotics and is supplemented by baths and massage. The worst of the ordeal is over in 48-72 hours and the patient is well on the way to physical recovery in 8-10 days.

Nellens and Massee (32) used the following form of this method of treatment of addicts received at the United States Penitentiary at Atlantic. No dose of the narcotic drug was given during the treatment after the entrance of the addict to the prison. The patient is put in the prison hospital and put to bed. He is then given a dose of mild mercurous chloride for initial pur-

ging and a daily dose of magnesium sulphate. The sleeplessness and restlessness is alleviated by simple sedatives such as sulfonal and chloral hydrate. Sodium bicarbonate and orange or lemon juice is administered to help control the nausea. Usually the nausea, pains and muscular twitchings are over by the third day and the appetite has returned. In from 7 to 10 days the patients are discharged from the hospital and put to work as soon as possible. In their hands, the sudden and complete withdrawal has been a safe procedure. In their opinion the most powerful therapeutic agent is the absolute certainty which the patient has, after the prison gates have closed behind him, that he cannot get any more of the addiction producing drug.

A program similar to the above was employed by Bennett (4) in the treatment of addicts at the Federal Penitentiary at Leavenworth. Here the course of treatment lasted on an average of 3 to 7 days and consisted principally of the elimination of the narcotic and the reconstruction of the patient, which in turn consists of recuperation and the treatment of their chronic ills if any are present. The patient was taken off the drug immediately and put to bed and purged with calomel and magnesium sulphate. The next morning another purge of

magnesium sulphate was given and then a hypodermic of strychnine 1/60 gr. and adrenalin solution 0.5 m. 1/1000 was injected every 3 hours during the time the patient was in the hospital. After each hypodermic, sodium bicarbonate was given to alleviate gastric distress. During the hospital stay the patient was given a course of electric sweat baths for 7 or more days followed by a needle spray to stimulate peripheral circulation. The diet during the first 3 or 4 days was liquid, followed by a special diet and tonic. The period of hospitalization depended upon the physical condition of the patient and the reaction to the withdrawal of the narcotic. Those patients in poor physical condition were then put on light work in the open air and sunshine and those in fairly good condition were immediately put to hard labor. Bennett states that this has been a quite satisfactory treatment but no claim is made for a permanent cure.

The method of sudden withdrawal of the narcotic is the one most commonly employed at penal institutions and its apparent effectiveness seems to speak for itself when used under the circumstances. It also shows the influence of the psychic factor in relation to the duration and intensity of the withdrawal symptoms.

Abrupt Withdrawal Under Hypnosis

This form of treatment is more common than the preceding and a multitude of drugs is used to produce the hypnosis. In reality, most of the methods to be described under the various headings use some form of hypnotic in the course of treatment, but the action of the hypnotic is considered to be secondary to that of some other drug used. Mattison (30), in 1893, described a form of treatment in which hypnotics are used to control the withdrawal symptoms. In this treatment the narcotic drug was stopped and the patient given sodium bromide in initial doses of 30 gr. twice a day at 10 A. M. and at 10 P. M. The dose was then increased by 10 gr. a day until a maximum dosage of 100 gr. twice a day was reached on the eighth day. On the ninth and tenth days the patient was given 100 gr. only in the evenings and then the drug was gradually but entirely withdrawn. At the end of this time the reflex symptoms were met with codein, 1-3 gr. orally every 2-4 hours according to the needs of the patient. Along with the bromide was given trional which was mainly for inducing sleep and was given exclusively during the first 6 or 8 nights. It was given in an initial dose of 40 gr. for males and 30 gr. for females, and the dose decreased gradually to 1/2 the initial dose, and then if it was necessary one could resort to

chloral, paraldehyd, etc. for the remainder of the treatment. This form of treatment is described here only as an example of the numerous treatments using hypnotics. In the literature of the treatment of addiction there are many ways described for using the hypnotics and many drugs used including in the category chloral, chloralamid, sulphonal, hypnal, hypnone, paraldehyd, somnal, acetanilid, ural, urethane, the bromides, and many others. In all of the treatments using them, the function of the hypnotic is to quiet the patient and produce sleep and give symptomic relief.

Abrupt Withdrawal assisted by Drugs of the Atropine Series

The drugs most commonly used in carrying out this treatment are scopolamin, hyoscin, and atropine. The work done by Light and Torrance (28) is taken as the classical example of this method. Before the narcotic drug was cut off they gave a hypodermic injection of morphine sulphate of sufficient quantity to prevent withdrawal symptoms for the first 24 hours. The patient was then given a mild dose of calomel followed in 8 hours by a saline cathartic. At the end of the 24 hour period 3 doses of scopolamin hydrobromide 1/200 gr. were given at 4 hour intervals, and with each dose was given 1/40 gr. of strychnine. Then, after a few more injections of

scopolamin were given, the dose was gradually raised to 1/100 gr. and at the end of 36 hours the drug was stopped. When the effects of the drug began to disappear large doses of phenobarbital were given if the withdrawal symptoms were present and still severe. From this time on the treatment was symptomatic. Sedatives were given for sleep and sodium bicarbonate for gastric distress. The patient was usually discharged at the end of ten days. According to these men themselves the treatment was not very satisfactory since about 50% of the patients returned for further treatment.

Abrupt Withdrawal assisted by Specific Treatment (narcosan, vegetable proteins, antibodies, etc.)

These methods are general treatments based on some definite theory or hypothesis as to the nature of withdrawal symptoms. The narcosan treatment was brought forth by Lambert and Tilney (26) in 1926 and was claimed to be a specific for prevention of the withdrawal symptoms. Narcosan was a solution of lipoids, together with non-specific proteins and vitamins. The lipoids were obtained from soy beans and cotton seeds, the vitamins from plant seeds, and the protein from alfalfa seeds. The theory of action was that narcotics call forth in the body certain protective substances to neutralize them.

If the narcotics be withdrawn suddenly and not given, these neutralizing substances themselves are toxic to the body. The lipoids in narcosan neutralize the toxic substances in place of the narcotic. The non-specific proteins were added to stimulate the blood forming tissues. On admission to the hospital the patient was given a bath and a thorough search of the person was made for any concealed drugs. Then a capsule was given containing the following:

Ext. colocynthidis-------- gr. 3
Hydragyri chloridi mitis-- gr. 1
Ext. Euonymin------------- gr. 1
Resinol Podophylli-------- gr. 1/2
Capsici------------------- gr. 1/2
Pulv. Zingib.-------------
Strychninae sulph. ~~a.a~~.--- gr. 1/60

This capsule was followed 3 or 4 hours later by a dose of epsom salts. As soon as the bowels acted the patient was given 1 c.c. of narcosan intramuscularly. Then 1 c.c. was given every 4 hours for the first 24 hours, every 6 hours for 3 days and nights, every 12 hours for 3 days and then once a day for about 10 days or until 40 injections were given. For restlessness injections of strychnine sulphate 1/60-1/30 gr. were given every 4

hours or as the needs of the patient demanded. Sodium bicarbonate 30 gr. in water every 3 hours was given to alleviate the gastric distress. Skilled nursing was very important. The patients usually felt better on the third or fourth day and the appetite returned on the fifth day. These men stated that the question of relapse was a social problem and that the question investigated was purely a medical decision of the value of narcosan as a treatment for narcotic addiction. They were firmly convinced that the use of narcosan was the treatment of choice.

Another worker who was whole-heartedly in favor of this form of treatment was Scheib (42) who treated a series of 1700 patients with apparently favorable results. He extended the course of treatment over a period of 3 weeks. The narcotic was stopped completely. The patient was purged and the gastric distress was lessened in the same way as the Lambert method. The actual administration of narcosan lasted 12 to 14 days. Scheib gave the injections more frequently during the early stages of the treatment and repeated them when the nervous symptoms were more pronounced, with the idea that the additional administration affords some patients greater relief. Strychnine sulphate 1/60 gr. as needed was prescribed in

every case. He was very enthusiastic over his results obtained from the use of narcosan, and he concluded that:

1. Drug addicts can be treated without the use of narcotics or any substitute for them.
2. Withdrawal symptoms must occur before there is any attempt at rehabilitation of the patient.
3. Pronounced symptoms are not due to the lack of action of narcosan, but are due to the action of cathartics, salines, etc.
4. The ability of narcosan treated cases to respond and recuperate is more rapid and more gratifying than in any other treatment.
5. Operative cases after receiving narcosan treatment give a normal reaction to narcotics.
6. The narcosan treatment reveals the true condition of narcotic addicts.
7. The treatment with narcosan is simple and easily performed but no medical man should undertake the treatment in a haphazard way.
8. Narcosan has proved its value by achievements unparalleled by any other previous treatment.
9. It is the most effective and humane treatment yet used.

It may be added here that Scheib had no record of the

cause of the addiction of his cases, no personality study, no comparison with control cases, no record of the duration of addiction, and very little or no follow up of the patients after they were discharged. Neither did he state how many patients returned for further treatment.

The widespread and much publicized use of narcon soon gave rise to conflicting opinion of other investigators. Johnson (15) used narcosan in the treatment of addicts at the Colorado State Hospital. The usual purging of the patient was carried out and the patient treated in the manner prescribed by Lambert. Twenty-four cases were treated with control cases for comparison. His conclusions were:

1. The patients treated with narcosan showed the usual withdrawal signs.
2. Of the 24 patients treated, 11 were subjectively relieved and 13 could see no effect.
3. Of the 11 relieved subjectively, 7 were known to have returned to the use of narcotics.
4. Narcosan is not as effective for controlling sleeplessness and restlessness as previous methods used in the hospital (baths, sweats, massage, sedatives, etc.).
5. Narcosan is of no value in the treatment of nar-

cotic addiction and the treatment remains a psychiatric problem.

Carter, Orbison, et. al. (6), in 1927, disagreed with the opinion of Lambert and Tilney that there were toxic substances in the blood as the result of narcotic addiction or of the withdrawal, since these substances had never been demonstrated chemically or physiologically. They were of the opinion that the clinical picture indicated primarily a disturbance of the endocrine system, either primarily or secondarily to the sympathetic nervous system, and that the withdrawal symptoms were manifestations of disturbance of endocrine hypofunction. They prepared and used a substance termed Proteal, a solution of alfalfa protein the same as contained in narcosan. One c.c. of Proteal was given every 4 hours subcutaneously for the first 24 hours, every 6 hours for the next 48 hours, then three times a day for 3-4 days, and then once daily thereafter. Strychnine sulphate 1/30 gr. was given every 6 hours as in the narcosan treatment, and sodium bicarbonate for the gastric distress. Since they believed the withdrawal symptoms were due to a functional upheaval in the endocrine system, they also administered orchitic substance to the men and a presumed ovarian substance to women, both of which seemed to help.

Their arguments in favor of this treatment were:

1. The plain protein had the same effect as the more complex narcosan mixture.
2. Patients treated with proteal did as well as on narcosan.
3. The action of foreign protein seemed to be fortified by endocrine products.
4. Necessary nursing care was minimized.
5. The treatment was cheap.

Carter and Williams (7) in a later article stated that narcosan had no value in the treatment of addiction. The clinical symptoms of withdrawal in patients treated with proteal correspond closely to those treated with narcosan and therefore, it was the protein effect and not the lipoid effect that was exhibited.

Many other forms of "specific" treatments have been devised for the treatment of narcotic addiction but their ineffectiveness was shown by the fact that they were not used much, gave poor results, and rapidly fell into disuse.

Abrupt Withdrawal With Special Symptomatic Treatment

In this form of treatment euphyllin and insulin have been used. The injection of euphyllin loreline is symptomatic and is based on the hypothesis that narcotic

withdrawal induced a hydration of the blood and probably of the tissues in general. Euphyllin is a powerful diuretic given by intragluteal or intravenous injections in a dosage of 0.48 gm. The injections are given daily, morning and evening, for 3-10 days according to the severity of the symptoms. The results reported are fairly satisfactory but further trials are necessary for the evaluation of the method. The use of insulin has been tried in Germany, Switzerland, and Denmark on the basis that the investigators found a low blood-sugar level during the withdrawal period. The dose was regulated according to the severity of the symptoms. The reports were both favorable and unfavorable but the treatment has not been accepted as being of much value.

Rapid Withdrawal With Injections of Autogenous Serum

We now come to the rapid withdrawal methods, the time element of which is regarded as a period of not more than 14 days from the commencement of the treatment to the final dose of the narcotic. The treatment with autogenous serum was described by Modinos in 1929. His technique was to raise a blister on a broad surface of the body with a cantharides cerate plaster. The fluid contained in the blister was withdrawn with a sterile needle and injected into the patient. The hypothesis

was that an acute hypersensibility to the drug was created and caused extreme distaste. Other investigators found that this treatment was no better than the ordinary methods and concluded that the favorable reactions were probably of a purely psychological character.

Rapid Withdrawal Aided by Drugs of the Opium Series

The rationale of this method of treatment is to supply some drug of the opium series to gradually or immediately replace the narcotic of addiction. The aim is not to replace the addiction drug with another producing addiction since this is simply substituting one evil for another, but rather to use a drug which will relieve the patient of the withdrawal symptoms, which will not produce addiction itself while being used, and which can be stopped any time without a deleterious effect on the patient. The one drug which has been found to be most useful and most effective is codein.

In 1930 the Mayor's Committee on Drug Addiction of New York City (38) after a study of the various forms of treatment, came to the conclusion that the rapid reduction of the narcotic with substitution by codein and then abrupt withdrawal of the codein after the symptoms had disappeared was the most humane form of treatment, especially in those cases of long standing addiction and

of poor physical condition.

Lambert (26), after further study and use of his narcosan treatment finally abandoned its use and in 1931 came to the conclusion that rapid reduction aided by codein was the best available and could be given by routine hospital treatment. He used a 10 day reduction period, the narcotic drug being reduced by 1/10 of the determined average maintenance dose for the patient. The codein was started on the second day and the dosage gradually increased with the decrease of the morphine. By the tenth day the addiction producing narcotic was stopped and then the codein was gradually tapered off. Also the usual purging was carried out.

Ossenfort (33) uses codein in the treatment of addicts at the Public Health Service Hospital at Fort Worth, Texas. Here the treatment lasts 1 to 4 weeks. The physical status of the patient is carefully determined before any treatment is begun. All patients are given enough morphine or codein to keep them comfortable for 3-4 days. The morphine is reduced while the patient is supported with bromides or phenobarbital in small doses. Five per cent glucose is given to combat the fluid loss. Restlessness is treated with repeated tepid baths and insomnia by rectal doses of paraldehyd. Near

the end of the reduction process 1 gr. of codein is substituted for 1 or more 1/4 gr. doses of morphine and after the morphine is stopped the codein is later discontinued rapidly. The patients in good physical condition are withdrawn rapidly in 1 week.

Rapid Withdrawal Aided by Drugs of the Atropine Series

As in the abrupt withdrawal method, the drugs used are scopolamin, hyoscin, and atropine. Bishop (5) was one of the first to use this form of treatment. The first step in the active preliminary treatment was to determine the amount of drug needed to supply the self-created needs and the average was found to be 1 gr. every 4 hours. The patients were given their narcotic drug in an initial 2 or 3 doses. The first dose was 1/2 to 2/3 of the total daily amount needed for the patient during the preceding few days; the second was 1/2 of the first and given 1/2 hour later; the third was the same as the second in amount and was given 1/2 hour after the second if the patient needed it. The usual catharsis was carried out, the object being to secure stimulation and elimination from the liver and to empty the intestine and was accomplished by blue mass in 5 to 10 gr. doses at indicated intervals and the action reinforced with other cathartics. Following active bowel movement the admin-

istration of drugs was begun. A belladonna mixture was used consisting of 2 parts of 15% tincture belladonna, and one part each of fluid extract of hyoscyamin and xanthoxylin. It was given every hour beginning at 6 drops and increasing 2 drops every 6 hours until a maximum dose of 16 drops was reached, unless the full effects reached before, and there maintained. The diet was light and in small amounts during the withdrawal period and the nursing adequate and by experienced nurses. Bishop concluded that the best results were obtained from the more extended and less vigorous treatment and the indications for stopping the mixture were found in the condition of the patient.

Lambert (24) set forth a treatment which stands as a classical example of this form of treatment. On admission the patient was given 5 c.c. pills and 5 gr. blue mass and 6 hours later if the bowels had not acted this was followed by a saline. After 3 or 4 abundant movements of the bowels the patient was given doses at 1/2 hour intervals of 2/3 or 3/4 of the total daily 24 hour dose of the narcotic drug he has been using. Six drops of the belladonna mixture were given at the same time as the morphine. This was given every hour for 6 hours. At the end of 6 hours the dosage was increased

2 drops every hour until 16 drops was reached. It was continued at this dose until symptoms of the drug appeared and then decreased and begun again at a reduced dose after the symptoms were gone. Ten hours after the first dose of the mixture was given the patient was again given 5 c.c. pills and 5 gr. blue mass. After the bowels had acted, the second dose of the narcotic drug was given in 1/3 to 3/8 of the original daily 24 hour dose. The belladonna mixture was still continued and 10 hours later 5 c.c. pills and 5 gr. blue mass. On the thirty-sixth hour the third dose of the narcotic was given in 1/6 to 3/16 of the original dose. Ten hours later 5 c.c. pills and 5 gr. blue mass were given followed in 7 to 8 hours by a saline cathartic. On about the fifty-sixth hour two ounces of castor oil were given. During this last period codein was given for nervousness and discomfort. For 2 to 3 days after the patient was off the narcotic the diet was watched or withdrawal symptoms occurred. The patient was exercised and built up physically as soon as conditions permitted. Lambert claimed that 75% remained free from addiction and that each case was a separate problem. He also thought that this was the best means of unpoisoning the patient so one could deal with him with a clear unpoisoned mind.

Later Sceleth (40) devised a treatment which he considered better than that of Lambert. In this treatment the following mixture was used.

Scopolamin hydrobromide----- gr. 1/100
Pilocarpin hydrobromide----- gr. 1/12
Ethyl-morphin hydrochloride- gr. 1/2
Fl. ext. cascara sagrada---- m. 15
Alcohol---------- m. 35
Water----------q.s.a.d. drachms 1

During the rapid reduction period of about a week the mixture was administered as follows:

1. Patients addicted to more than 10 gr. of morphine per day got 60 m. every 3 hours day and night for 6 days, 30 m. on the seventh day, 15 m. on the eighth day, 15 m. three times a day on the ninth day and the mixture was stopped and a tonic treatment started.
2. Patients addicted to less than 10 gr. and more than 5 gr. per day, started with 45 m. and the reduction started on the seventh day and carried out in the same way.
3. Patients addicted to less than 5 gr. per day, only 30 m. as initial dose and carried out as above.
4. Heroin cases were treated the same as morphine

cases.

5. Opium cases, 30 m. every 3 hours and the ethyl-morphine hydrochloride reduced to 1/8 gr. per dose.
6. Cocaine cases, 15 m. every 3 hours without the ethyl-morphine hydrochloride. On the tenth day the mixture was discontinued and strychnine nitrate 1/30 gr. was given for 3 doses. The following day the strychnine was reduced to 1/60 gr. and continued three times a day for a week. When the mixture was stopped and the patients condition permitted, graded exercises were started, in the open if possible, to build up the patient and prevent insomnia. Sceleth concluded that no plan of treatment could assure the patient freedom from recurrence but that it was entirely a matter of the individual.

Copeland (8) in 1920 used a similar form of treatment except that the drug used was hyoscin instead of scopolamin. In his reduction of the narcotic drug he considered 1 gr. three times a day as the maximum daily dose needed to keep even the most inveterate addict comfortable. Elimination of the narcotic was started on the fourth day of the treatment and completed on the sixth,

the withdrawal symptoms being treated with hyoscin given in 1/200-1/100 gr. doses according to the needs of the patient.

In 1934 Scott (43) stated that the morphinist depends upon the constant vagal stimulation and sympathetic depression produced by the drug and that frequent and minute doses of atropine secure the steady vagal tone which means a smooth passage to recovery. In his method 1/100 gr. atropine is dissolved in saline with the day's supply of morphine, 1/2 drachm being injected every 2 hours while the patient is awake. The amount of the drug actually used formed the maximum for the following day and this process was continued until not less than 1/4 gr. is taken in 24 hours. The atropine was increased so slowly that eye signs were not produced, and luminal was administered in large and increasing amounts. Scott was of the opinion that painless withdrawal, anxious consideration of the problem of fatigue, and adequate psychological treatment were the three factors without which constant success is impossible.

Withdrawal Under Treatment by Endocrine Preparations.

In the past years there have been numerous reports of treatment with the endocrine products both alone and combined with some other form of therapy. These prod-

ucts have included ovarian hormones, testicular hormones, thyroid extract, suprarenal extracts, kidney preparations, liver extracts and many other substances, all being used on the hypothesis that the withdrawal symptoms are due to an endocrine system hypofunction. The results obtained were not remarkable and in most cases negligible and in recent years the administration of endocrine has fallen into disuse.

The Gradual Reduction Methods

The aim of these methods is to gradually reduce the narcotic drug within no definite period of time and to treat symptoms as they appear. McIver and Price (31) used this method in treatment of 147 cases at the Philadelphia General Hospital. All addicts were kept under continuous and close observation by absolutely honest and trustworthy nurses and attendants. For the first 24 hours the patient was given enough of the narcotic to keep him comfortable and free purgation was carried out. Then the drug was gradually withdrawn and sedatives used for the symptoms. The diet was nutritious, easily assimilated, and increased gradually. These men concluded that the gradual withdrawal method was the most satisfactory, with the use of sedatives or stimulants as was required in each individual case.

Wilson and Bartle (49) state that the gradual withdrawal method is the one of choice in patients who are in poor physical condition or who have some organic disease, since the abrupt or rapid withdrawal may cause death in these patients. In these cases, supportive measures are used the same as in other cases.

At the California State Narcotic Hospital, Joyce (16) used the gradual reduction method and the patients were treated as sick people with a definite physical disease condition. The physical defects were first corrected, if present and then the narcotic gradually withdrawn.

Rehabilitation of the Narcotic Addict

We now come to the consideration of the most important part of any form of treatment of the addict, that of the rehabilitation of the patient after the use of the drug has been eliminated. Many of the treatments just described incorporated some form of rehabilitation therapy and many did not. This was purposely omitted in describing the various forms of treatment since the rehabilitation of the patient is a problem within itself and is best discussed separately. It may be added that without treatment there is no cure for addiction and without rehabilitation any form of treatment is doomed to failure and will result in the relapse of the patient to his

former narcotic addiction. The earliest treatment incorporated little or no rehabilitation program, since the authors of these treatments thought that once the drug was withdrawn the patient was cured.

McIver and Price (31) in their treatment, started a systematic routine of exercise as soon as the patient was able to be up and about. They tried to teach the patient to lead a quiet and well regulated life and when the patient left the hospital he was advised to seek a new environment and engage in some active work which was suited to his ability.

In 1918 Dana (9) stated that the cure of established addiction is long, expensive, and difficult and probably should not be undertaken by the state. He thought that addicts do not do as well on farm colonies as do alcoholics and should be treated only in hospital wards or institutions, under restraint. While there, reeducational methods should be applied and the mental and physical conditions of the patient readjusted. As to the group of chronic addicts, he was of the opinion that they can only be treated symptomatically and should be given the withdrawal treatment when desired by the addict.

Kolb (21) is of the opinion that the relapse of drug addicts is due mainly to the same cause which was

responsible for their original addiction; namely, a pathological nervous constitution with its inferiorities, pathological strivings, etc., from which narcotics give an unusual sense of relief. Relapse is more common than formerly because the addiction of the more normal and, therefore, more easily curable person is less common. The hope for cure wanes as time passes and the force of habit, numerous impelling memory associations, and increasing physical dependence is added to the original nervous pathology. Nearly all addicts make sincere efforts to be cured during the early period of addiction. Many "cures" may be taken later on, but usually are matters of expediency and are insincere in effort.

At the California State Narcotic Hospital, Joyce (16) started a series of graduated exercises, often the withdrawal treatment, to try to obtain thorough physical restoration of the patient. The exercises last from 2 to 3 weeks after which there is a long period of after care during which time the patient is occupied with work suitable to the individual needs. The cases admitted to this hospital are from the superior courts of the state and to gain parole the patients must show a state of physical and mental balance such that the use of drugs is unnecessary. They must also show evidence of being

able to earn a living after leaving the hospital. Usually a job is obtained through the parole officer, before the patient leaves, who also seeks the aid of a near relative to aid in keeping the addict from relapse.

Adams (2) contends that the craving for a narcotic is only permanently removed if we substitute in its place something stronger and more potent. The causes leading to the addiction should be determined and studied and removed if possible. As soon as the disintoxication period is completed one should build up the patient's health and this is best done by physical training and work. The patient should be put to work as soon as possible and the work must be adapted to the abilities of each patient. One must also try to replace the narcotic craving by activities too often discarded by the addict when he took up the habit, and in this respect healthy sports play an important part. The sense of responsibility to the family and society must be created anew. Physical and mental fatigue should be avoided. If the patient is solitary he should endeavor to become a good mixer. If he is gregarious he must change his herd but must be careful with whom he mixes. Addicts must be dealt with psychotherapeutically and the personality developed in a frankly pedagogic fashion. Adams concludes that it is

easier to say what should be done than it is to do it.

Probably one of the most efficient methods of rehabilitation is that described by Kolb and Ossenfort (23) which is used at the two Federal Narcotic Hospitals. The treatment will be described in detail, exclusive of the withdrawal treatment, because this rehabilitation program embodies all of the recommendations and principles set forth by other writers in their various forms of treatment. The hospitals were established by an act of congress and the one at Lexington, Ky. was opened for patients in May, 1935.

The regulations governing admission as outlined by the Surgeon General of the U. S. Public Health Service became effective in April, 1938 and are as follows: No person shall be eligible for treatment or confinement in a United States narcotic farm unless he is an addict as hereafter defined and then only: (1) if such person has been sentenced to confinement on conviction of an offense against the United States, including conviction by general courts-martial or by consular courts; (2) if such a person is completing a sentence of confinement at a narcotic farm and applies in accordance with the requirements of these regulations for further custodial care and treatment beyond the expiration of sentence;

(3) if such a person is placed on probation by any court of the United States or other federal authority which has imposed as one of the conditions of such probation that he will submit himself for treatment until discharged as cured, or (4) if such person, being not an unconvicted alien, voluntarily signs an application requesting custodial care and treatment in accordance with the requirements of these regulations.

An addict is defined as any person addicted to the habitual use of opium, cocaine, cannibus indica, and peyote and to any preparation or derivative of these four drugs.

The hospital at Lexington was opened for patients in May, 1935. Up until August, 1938 over 3,000 drug addicts had been treated. Most of the patients are federal prisoners but there are also many probationers and voluntary patients. There are no facilities for women. The stages in the treatment are: the withdrawal treatment; building up the patient physically and mentally while still in the institution; and adjustment of outside conditions in preparation for eventual return to society. Time is an important factor.

A complete study of the patient is made during the first 30 days in the hospital. The withdrawal of the

narcotic is delayed until the degree of habit is determined and if any organic disease is present. Foci of infection are determined, especially the mouth because addicts have a tendency to show dental caries very often. The robust patients are withdrawn more rapidly than those with organic disease. Patients with inoperable cancer and those with tabetic crisis are not withdrawn. Tuberculous patients are withdrawn and changed to codein. A psychiatrist is assigned full time to each newly received patient. At the end of the 30 day period the observations are incorporated into the ward record and a report is prepared for the classification board.

The board for classifying the addicts consists of: the executive officer, clinical director, staff psychiatrists, the psychologist, chief nurse, chief custodial officer, and the registrar. The addicts are classified by the board into the following groups:

1. normal individuals accidentally addicted.
2. psychopathic diathesis.
3. psychoneurosis.
4. psychopathic personality without psychosis.
5. inebriate.
6. drug addiction associated with psychosis.

This classification of the addict furnishes statistical

information as to the predisposing cause of the addiction and provides a motive for intensive study for thorough understanding and effective treatment.

The program of rehabilitation includes besides psychotherapy and medical care, occupational therapy, reading, recreation and a gradation of custody or supervision. Intensive psychotherapy is given to selected patients who will most likely benefit by it but some is given to all. The occupational therapy given is regular employment at an occupation similar to what the patient would be doing if he were on the outside. There is ample opportunity to learn farming, tailoring, shop trades, landscaping, animal husbandry, dairying, slaughtering, construction and many others. The chronic psychopaths and invalids are given weaving, woodcarving, etc. to occupy their time. For recreation simple games are provided. There is a reading period and radio programs between the end of the day's work and 9:30 at night. However, no patient is forced into recreational activities.

The supervision is divided into the grades of maximum, medium inside, medium outside, and minimum. There is just enough supervision so that the living conditions are as near like those outside as possible. Over 40% of the patients have minimum supervision and the voluntary

patients are accorded the same treatment as the prisoners.

The discipline is as mild as possible. Infractions of rules are regarded as mental maladjustments. When an infraction occurs the environment and work of the patient are changed and the patient is given psychiatric care.

The after care of these patients is carried out over a considerable length of time. The paroled and probationer patients are under the supervision of a United States probation officer for a definite period of time after their release. An attempt is made to find a job for the patient in a suitable environment before leaving through various social service groups and employment agencies. The environment to which the patient returns is very important in preventing relapse.

The end results of this treatment are that the physical condition of the patient is improved, and the power of resistance is increased. The results justify the conviction that the management of drug addicts as patients who are mentally ill is logical and that long prison sentences are detrimental to the well being of the patient.

The treatment at the narcotic farm at Fort Worth, Texas is very similar. This institution was opened for

patients in October, 1938, and in 1 year 1,036 patients were treated. Ossenfort (33) states that here the buildings and grounds are designed to take care of the more tractable type of patient. The reservation is enclosed by a fence but there are no armed guards. Attendants are at the gates. A count of the patients is made every 8 hours, the mail is censored and the patients are not allowed to leave the reservation. Escapes are rare since the prisoner patients are deterred by a 5 year penalty and the probationer patients by a suspended sentence. The voluntary patients are given their release when they request it. The post-institutional care is the same as that at the Lexington Hospital.

Thus it can be seen that a treatment of any sort without some form of rehabilitation and psychiatric care of the patient is without any value, except in those rather rare instances when a normal person has become addicted.

Control

The problem of control of narcotic addiction is one which has constantly confronted the medical profession and the law making bodies ever since its existence was first recognized. Control measures were very slow in gaining momentum at first, but after the passing of the Harrison Narcotic law in 1915 legal measures were more rapidly enacted and the control of the use of narcotics has gradually become more efficient and effective as years have passed. However, there is still much to be done in the way of legal control of narcotic addiction as well as in the part played by each individual physician and by society in general.

One of the earliest workers to mention measures for control was Earl (11) in 1880. He recommended that the physicians avoid the indiscreet and reckless habit of prescribing opiates to the nervous class, hysterical women, and hypochondriacal men. The physician should have enough interest in the future welfare of the patients to advise and encourage discontinuance of any prescription containing opiates in any form. He thought that the physician should cooperate with the family druggist in preventing the refilling of prescriptions containing not only opiates, but alcoholic stimulants. One

of the most interesting of his statements was that the physician should never under any circumstances teach the patient how to use a hypodermic syringe, since it was only a few years before this time that the hypodermic syringe was invented and was being perfected.

During the ensuing years the various investigators argued pro and con as to how addiction should be treated and controlled. Finally as a result of popular agitation in the United States, the Harrison Narcotic Law was passed and enacted by the Federal Government on December 17, 1914 and put into effect in 1915. Williams (48). This law was nominally a tax law or revenue measure entrusted for administration to the U. S. Treasury Department. The main purpose specifically was to carry out our international treaty obligations by establishing the control of distribution of narcotic drugs in the United States, so as to prohibit their abuse, and to restrict their use to proper channels of legitimate medical, scientific, dental, and veterinarian practice. It met with popular approval even though it placed restrictions on the medical profession and in effect it dictated the manner of practicing the profession of medicine to an extent never before approached by any legislation.

In 1920 Copeland (8) stated that the law had no teeth

to enforce medical provisions until 1919 and in 1921 Williams (48) suggested that there be some slight modification in the law tending to emphasize the medical side of the narcotic problem. He further stated that at that time the concensus of opinion of the federal, state, and county officials that the amount of narcotics consumed, and the drug takers were just as great if not greater than before the enforcement of the Harrison law because the law added criminality to immorality. In other words, emphasized the legal aspect of the problem and subordinated the medical features; it regarded narcotic addiction as purely a criminal act willfully indulged in by normal individuals and did not give sufficient consideration to the underlying cause of addiction.

Other reasons for the early failure of the Harrison law are those given by Prentice (35). He contends the law failed early because of inefficient efforts of enforcement and because of the failure of the state governments to provide adequate cooperation through legislation and use of police powers. For the year of 1920 congress appropriated $750,000.00 for the enforcement of the law. The Treasury Department employed 175 men as a field force for enforcement, and less than the sum appropriated was spent for enforcement. The report of the

Commissioner of Internal Revenue for the year 1920 shows that during that year the sum of $1,513,919.50 was collected under the Harrison law. Prentice insisted that by all means the sum appropriated by congress should be spent for the enforcement, and also the revenue collected under the law.

The accusations against, and the praises for, the Harrison Narcotic law have continued to the present time, with numerous recommendations for changes and just as numerous reasons why it should be left as originally drafted. However, the law has continued largely as it was drafted, with additions, some parts repealed, and supplemented by state laws.

Due to the fact that in past years there was considerable addiction in the army, especially to heroin along the eastern seaboard, the New York Psychiatrical Society and the Public Health Committee of the New York Academy of Medicine (36) recommended, among many other things, that some study of the condition of narcotic addiction in the army and navy be made, and special care be taken to discover the existence of addiction in recruits. As the result of the recommendations of this committee, in 1924 the use of heroin in the United States Army was interdicted by order of the Surgeon General, in the United

States Public Health Service the use of heroin was interdicted by order of the Surgeon General, and the health commissioners of Chicago and New York City advised to stop the use of heroin in all the hospitals. Simon (44)

One of the reasons why the control has been ineffective is the lack of cooperation between the States and their failure to adopt a uniform state narcotic law. Hughes (13) states that in 1932 the National Conference of Commissioners on Uniform State laws, meeting at the forty-second annual conference, drafted a uniform state narcotic law. A description of this model act will be given for reasons to be stated later.

A physician is defined as "person authorized by law to practice medicine in this state and any other person authorized by law to treat sick and injured human beings in this state and to use narcotic drugs in connection with such treatment". It provides that a physician or dentist, in good faith and in the cause of professional practice only, may prescribe, administer, and dispense narcotic drugs, or he may cause the same to be administered by a nurse or intern under direction and supervision. The act requires that a record be kept of narcotic drugs administered, received, and dispensed or professionally used otherwise than by prescription. It provides

that no record need be kept of narcotic drugs administered, dispensed, or professionally used in treatment of any 1 patient, when the amount administered, dispensed, or professionally used for that purpose does not exceed in any 48 consecutive hours,

(a) 4 grains of opium, or

(b) 1/2 grain of morphine or any of its salts, or

(c) 2 grains of codein or any of its salts, or

(d) 1/4 grain of heroin or any of its salts, or

(e) a quantity of any other narcotic drug or any other combination of narcotic drugs that does not exceed in pharmacological potency any one of the drugs named above in the quantity stated.

Relative to the revocation of professional licenses for violation, the draft provides that "on conviction of any person of the violation of any provision of this act, copy of the judgment and sentence, and of the opinion of the court or magistrate, if any opinion be filed, shall be sent by the clerk of the court, or magistrate, to the board or officer, if any, by whom the convicted defendant has been licensed or registered to practice his profession or carry on his business. On conviction of any such person, the court may, at its discretion, suspend or re-

voke the license or registration of the convicted defendant to practice his profession or carry on his business. On application of any such person whose license or registration has been suspended or revoked and upon proper showing and for good cause, said board or officer may reinstate such license or registration".

States are more lax as regards the care and treatment of narcotic addicts. After the adjournment of the 1935 legislature, 12 states had no statutes authorizing institutional treatment of narcotic addicts and 18 states had no statuatory provision for compulsory commitment of addicts to public institutions. At the time the model law was being drafted, the Surgeon General of the United States Public Health Service presented to the chairman of the committee the necessity of adequate provision by states for the care of addicts. This was left up to the individual states. By the year 1939 the model act had been enacted into law by all states except California, Maine, Kansas, Massachusetts, New Hampshire, North Dakota, Pennsylvania, Vermont, Washington, and the District of Columbia. What these states have done in regard to adopting the model act has not been reported.

Summary

It can thus be seen that the solution of the problem of the narcotic addict is not to be found in cutting off his supply of drugs, in endeavoring to restrict its use through punitive measures, or even making its possession a crime, and incarcerating him when caught breaking the law. These procedures undoubtedly act as a deterrent among average stable personalities, but not among the psychopathic personalities. Since at the present time approximately 90% of the narcotic addicts have a psychopathic personality as a background for the cause, most legal measures are a failure. The addicts of psychopathic personality prefer the life of useless narcotism, varying between short periods of state care which enforces abstinence, and short periods of freedom in which they can balance their unhappiness during periods of abstinence with their contentment during periods of forgetfulness.

As stated before, nearly 90% of the addicts today are psychopathic personalities, not socially insane, but differing sufficiently from the average human being to be considered abnormal. They do not differ in kind, but only in degree from the mental perversions and psychological distortions of the insane. They are defective

in the emotional side of their personalities. The majority have been brought up under such social conditions that they have been intensified in their anti-social point of view, emotionally defective, and inadequately or improperly trained in emotional control. These mentally unstable individuals obtain a keen mental pleasure from their narcotic during the early period of their addiction, seemingly in direct ratio to the amount of their instability. They fall a ready prey to the seduction of narcotics, but they were psychopathic before they took the narcotic, and they remain mentally unstable, not because of the narcotic, but in spite of it, for certain of the very unstable types seem less deranged and unstable when under the narcotic than without it.

The treatment and elimination of narcotic addiction resolves itself into the proper legal control of the drug traffic and the rehabilitation of the addict. There is a political and economic aspect to every disease and the medical profession has failed to impress the appropriating and governmental bodies with the supreme importance of adequate official action. Narcotic addiction differs from other diseases in that there is no immunity for the cured and the moral and physical predisposition renders the once innoculated liable to fresh attacks.

The illegal drug traffic can be controlled by adequate legal measures but the rehabilitation of the addict requires the combined efforts of government, the medical profession, and society in general. Addiction will never be solved by a forcible nature alone but must go hand in hand with intelligent medical services. Furthermore, to be effective, the control will have to correlate the professions directly interested and will also have to secure the cooperation of all charitable and social agencies in order to work out a program for the effective administration of the antinarcotic laws, as well as to rebuild those unfortunate persons afflicted with narcotic addiction.

There is no specific or definite treatment for narcotic addiction and each case is a problem in itself. For this reason more provisions should be made for hospital or institutional treatment to cover the stage of withdrawal and for the control care, and moral and mental as well as physical upbuilding of those persons who require it and show possibilities of profiting from such treatment. The cured addict requires suited guidance for a long period of time before he can feel at home in his new surroundings.

In conclusion, the problems of narcotic addiction

may be summed up in the problems of life, the underlying causes being more personal than social. Addiction begins and ends in the realm of personality.

Bibliography

1. Adams, E. W.: The Treatment of Drug Addiction: A Review, Practitioner, 129:234, August, 1932

2. Adams, E. W.: The Treatment of Drug Addiction: A Review, Practitioner, 129:390, September, 1932

3. Anderson, V. V.: Drug Users in Court, Boston Medical and Surgical Journal, 176:775-757, 1917

4. Bennett, C. S.: Hospitalization of Narcotic Addicts U. S. Penitentiary, Leavenworth, Kansas, J. Kansas M. Soc., 30:341-345, October, 1929

5. Bishop, E. S.: Morphinism and Its Treatment, J.A.M.A., 58:1499-1504, May 18, 1912

6. Carter, M. G., Orbison, T. J., Steele, E. H., Wright, C. A., and Williams, E. H.: The Proteal Treatment of Drug Addiction, N. Y. Med. J. and Rec., 282-284, September 7, 1927

7. Carter, M. G., and Williams, E. H.: Further Observations on the Proteal Treatment of Drug Addiction, N. Y. Med. J. and Rec., 131:597-598, June 18, 1930

8. Copeland, R. S.: The Narcotic Evil and the New York City Health Department, American Medicine, 26:17-23, January, 1920

9. Dana, C. L.: Problems of Drug Addiction, Med. Record, 93:177, February 2, 1918

10. Detrick, L. E. and Thienes, C. H.: Experimental, Clinical, and Legal Aspects of Drug Addiction, Cal. and West. Med., 43:331-337, November, 1935

11. Earl, C. W.: The Opium Habit, Chicago Med. Review, 442-446, 493-498, 1880

12. Hubbard, S. D.: Some Fallacies Regarding Narcotic Drug Addiction, J.A.M.A., 74:1439-1441, May 22, 1920

13. Hughes, J. E.: Narcotic Control by Law in the United States, Am. J. Psychiat., 95:881-886, January, 1939

14. Jewett, in Tices Practice of Medicine, 8:21, W. T. Prior Co., Hagerstown, Md.

15. Johnson, George S.: The Use of Narcosan in the Treatment of Drug Addiction, Colorado Medicine, 24, November, 1927

16. Joyce, T. F.: California State Narcotic Hospital; its aims and work, Cal. and West. Med., 31:190-192, September, 1929

17. Keschner, M.: The Psychiatric Aspect of Drug Addiction, N. Y. State J. Med., 29:1391-1393, November 15, 1929

18. Kolb, L.: Drug Addiction in its Relation to Crime, Mental Hygiene, 9:75-89, January, 1925

19. Kolb, L.: Types and Characteristics of Drug Addicts, Mental Hygiene, 9:300-313, April, 1925

20. Kolb, L.: The Relation of Intelligence to the Etiology of Drug Addiction, Am. J. Psychiat., 5:163-167, July, 1925

21. Kolb, L.: Clinical Contributions to Drug Addiction; The struggle per cure and conscious reasons for relapse, Journal Nervous and Mental Diseases, 66, July, 1927

22. Kolb, L., and Himmelsbach, C. K.: Clinical Studies of Drug Addiction, Am. J. Psychiat., 94:759 1938

23. Kolb, L., and Ossenfort, W. F.: Treatment of Drug Addicts at the Lexington Hospital, South. M. J., 31:914-922, August, 1938

24. Lambert, A.: Treatment of Narcotic Addiction, J.A.M.A., 60:1933-1936, June 21, 1913

25. Lambert, A.: The Amount of Opiates Used in Legitimate Practice of Medicine, J.A.M.A., 78, May 20, 1922

26. Lambert, A.: Treatment of Drug Addiction, J.A.M.A., 96:825-830, 1931

27. Lambert, A., and Tilney, F.: The Treatment of Narcotic Addiction by Narcosan, Med. J. and Rec., 124:764-768, December, 1926

28. Light, A. B., and Torrance, E. G.: Opium Addiction; A comprehensive study of effects of the scopolamin treatment for Morphine Addiction, Arch. Int. Med., :194 1929

29. Macht, D. I.: The History of Opium and some of its Preparations and Alkaloids, J.A.M.A., 64:477-481, 1915

30. Mattison, J. B.: The Modern and Humane Treatment of the Morphine Disease, Med. Record, 44:804-806 1893

31. McIver, J., and Price, G. E.: Drug Addiction-Analysis of 147 Cases at the Philadelphia General Hospital, J.A.M.A., 66:476-480, February 12, 1916

32. Nellens, C., and Massee, J.: Management of Drug Addicts in U. S. Penitentiary at Atlanta, J.A.M.A., 92:1153 1929

33. Ossenfort, W. F.: Treatment of Drug Addicts at the U. S. Public Health Service Hospital, Ft. Worth, Texas, Texas State Jour. Med., 35:428-432, October, 1939

34. Pearson, C. B.: Police Powers vs. Science in Care and Management of Opium Addict, American Medicine, 26:35-43, January, 1920

35. Prentice, A. C.: The Problem of the Narcotic Addict, J.A.M.A., 76:1551-1556, June 4, 1921

36. Recommendations of the New York Psychiatrical Society and the Public Health Committee of the New York Academy of Medicine, Med. Record, 93:468, March 16, 1918

37. Regulations Governing Admission to the United States Narcotic Farm, J.A.M.A., 110:1780-1781, May 21, 1938

38. Report of Mayors Committee on Drug Addiction to the Hon. Richard C. Patterson, Jr., Commissioner of Correction, New York City, Am. J. Psychiat., 10:433-538, November, 1930

39. Rubin, S. H.: Drug Addiction and Modern Methods for Control, Boston M. and S. J., 175:792-794, November 30, 1916

40. Sceleth, C. E.: A Rational Treatment of the Morphine Habit, J.A.M.A., 66:860-862, March 8, 1916

41. Sceleth, C. E., and Kuh, S.: Drug Addiction, J.A.M.A., 82:679-682, March 1, 1924

42. Scheib, C. W.: The Value of Narcosan for Narcotic Addiction, N. Y. Med. J. and Rec., 129:191-193, February 20, 1929

43. Scott, G. L.: Note on Drug Addiction Treatment, British Medical Journal, 2:1149, 1934

44. Simon, C.: Survey of the Narcotic Problem, J.A.M.A., 82:675-679, March 1, 1924

45. Swords, M. W.: A. Resume of Facts and Deductions obtained by the operation of a Narcotic Dispensary, American Medicine, 26:23, January, 1920

46. Tatum, A. L., and Seevers, M. H.: Theories of Drug Addiction, Physiol. Rev., 11:107-121, April, 1931

47. Terry, C. E.: Narcotic Drug Addiction and Rational Administration, American Medicine, 26:29-35, January, 1920

48. Williams, E. H.: Some Observations on the Narcotic Situation, Med. Record, 100:140-143, 1921

49. Wilson, G., and Bartle, H., Jr.: Drug Addiction, M. Clin. North America, 23:1735-1745, November, 1939